OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI): (a) to (c) No, Sir. The desion of Nuclear Reactors takes into account the ageing effects and, as such, there is no hazard during the designed life of the reactor. The available indigenous expertise and capability are adequate to meet the challenge posed by ageing effects without any compromise on safety. The problem of ageing of nuclear reactors has been studies extensively both internationally and by the Department of Atomic Energy and adequate measures are taken to ensure that safety is not compromised at any stage in the life of the Reactor. The measures taken include continous monitoring and inservice inspection of all safety related equipments using advanced techniques and their replacement and rehabilitation as appropriate based on such inspection. Such periodic mandatory inspections are also, stipulated by the Atomic Energy Regulatory Board. The First National Symposium on Ageing Management of Nuclear Facilities was organised during January 13—15, 1994 at Bombay, when various issues relating to ageing management were discussed. Research and Development work has also been undertaken to enhance our capability in this areas.

**Delay in Commissioning of Kaiga Atomic Power Project**

426. SHRI G.Y. KRISHNAN: Will the PRIME MINISTER be pleased to state;

(a) whether it is a fact that commissioning of the Rs. 730 crore Kaiga Atomic Power Project in Karnataka is being delayed because of a serious crisis in the cooling water supply;

(b) if so. what is the major hurdle in its way; and

(c) how long will it take to commission the Kaiga Atomic Power Project?

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE AND THE MINISTER OF STATE IN THE DEPTTS. OF ATOMIC ENERGY AND SPACE WITH ADDITIONAL CHARGE OFTHE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI): (a) and (d) The Kaiga Atomic Power Project in Karnataka, when commissioned would require cooling water to be drawn from the Kadra reservoir on Kali river presently under construction by the Karnataka Government. As the construction of the dam is a parallel activity, the matter has been taken up with the Government of Karnataka for expenditing the work on it so that the dam will start impounding water to suit the schedule of the Nuclear Power Station.

(c) The first unit of this Atomic Power Project is scheduled to achieve criticality by June 1996 and the second unit by December 1996.

**Study of Seismic Character on Napp Site**

427. DR. SHR1KANT RAMCHANDRA JICHKAR; Will the PRIME MINISTER be pleased to slate:

(a) whether the recent earthquakes in Marathwada have established that the State of seismic predictability and study in our country was not proper: if so, whether Government feel the need to study, in more details, the scheme of the Narora Atomic Power Station in UP whose designs are claimed to be suited to the seismic characters of the site;

(b) whether the recent news reports about the great Himalayan fault or ridge which is supposed to separate the Peninsula from the Himalayan Tectonic plate were taken into consideration while designing the said power project;

(c) what are the names of the Seismic experts who were involved in the designing of the Narora Atomic Power Project and whether the seismic predictability potential of these experts has been established beyond doubt; and

(d) whether the bigger reactors which are envisaged at a later stage in Narora would also be seismically protected in the same design ?

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE AND THE MINISTER OF STATE IN THE DEPTTS. OF ATOMIC ENERGY AND SPACE WITH ADDITIONAL CHARGEOF THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI): (a) In siting Nuclear Power

Plants, an area of 300 Kilometers radius around the site is investigated using all available seismological, geological & geophysical information, satellite imageries and other remote sensing data including history of earthquakes. Geological faults are investigated in the site region, and their maximum earthquake potential is estimated, which is taken for seismic design. In case of any doubt, the interpretation leading to the worst possible earthquake is taken for design. An earthquake of magnitude 6.7 on the richter scale has been assumed to occur at a distance of twelve Kilometers from the Narora Atomic Power Station (NAPS) site to maximize the earthquake design parameters for NAPS. This is considered to be the magnitude of the maximum credible earthquake which the Moradabad fault (passing at a distance of twelve Kilometres North West of the NAPS site), may be capable of in the worst case. After the occurrence of Marathwada earthquake in September, 1993, Government of India has constituted a National Committee to consider the large scale restructuring of the National Seismological Monitoring Systems and several co-seismic and other geophysical investigations in the Indian peninsula shield.

(b) The seismicity of the Himalayan region has been known for quite some time, and instrumentally recorded data on earthquakes in that region had been available to make an assessment of the earthquake hazard in the NAPS area, the fact that the peninsula is a different geological entity and belonged to a different tectonic regime was well known at the time of NAPS design, and has been appropriately taken into consideration in the design of the reactor and other reactor Components. Earthquakes in the Himalayan region will not adversely affect the NAPS as was confirmed at the time of the Uttarkashi earthquake on October, 20,1991.

(c) The Department of Earthquake Engineering, Roorkee, which is nationally and internationally known, had prepared the Seismic design report for the NAPS. Information used in arriving at the seismic design parameters was collected by the Department of Earthquake Engineering from the Geological Survey of India, Metereological Department and other National Agencies. The seismic design reports were subjected to extensive review by the Narora Design Safety Committee and the Atomic Energy Regulatory Board and by several experts from National Agencies.

(d) At present additional reactors are not envisaged at the Narora site.

**Nuclear Radioactive Wastes in Tarapur Atomic Power Station**

428. DR. SHRIKANT RAMACHANDRA JICHKAR: Will the PRIME MINISTER be pleased to state:

(a) what is the total quantum of nuclear waste of radioactive material which is generated in Tarapur Atomic Power Station, annually;

(b) out of this waste how much can be covered by the waste management facilities developed and which are in operation in Tarapur Atomic Power Station;

(c) what is the fate of the balance waste;

(d) whether environmental groups have represented against the mismanagement of this radioactive waste; and

(e) if so, what steps are being taken to take care of the said wastes?

THE MINISTER OF STATE IN THE PRIME MINISTER's OFFICE AND THE MINISTER OF STATE IN THE DEPTTS OF ATOMIC ENERGY AND SPACE WITH ADDITIONAL CHARGE OF THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI): (a) Tarapur Atomic Power Station (TAPS) generates on an everage 50,000 Cubic Metres of liquid effluents and 330 Cubic Metres of solid waste annually.

(b) Liquid and solid radioactive waste management facilities set up and in operation at Tarapur are capable of safely managing the entire quantity of liquid effluents and solid waste generated at Tarapur Atomic Power Station.

(c) Does not arise.

(d) The Department is not aware of complaints from any environmental groups about waste mismanagement.

(e) Does not arise.